MCQs
102- Math
Unit 1

Date

(1) $(A')' = ?$

(a) $U - A$ (b) A' (c) U (d) A

Ans, (d) A.

(2) Let $A = \{1,2,3,4,5\}$ and $B = \{1,3,5,7\}$ then $A - B =$

(a) $\{7\}$

(b) $\{2,4\}$

(c) $\{2,7\}$

(d) None of the above

Ans, (b) $\{2,4\}$

(3) If A, B and C are any three sets, then $A \times (B \cup C)$ is equal to

(a) $(A \times B) \cup (A \times C)$

(b) $(A \cup B) \times (A \cup C)$

(c) $(A \times B) \cap (A \times C)$

(d) $(A \cap B) \times (A \cap C)$.

Ans, (a) $(A \times B) \cup (A \times C)$

(4) If $A = \{5,6,7\}$ and $B = \{7,8,9\}$ then $A \cup B$ is equal to

(a) $\{5,6,7,8,9\}$

(b) $\{7,8,9\}$

(c) $\{5,7,8,9\}$

(d) $\{7\}$

Ans, (a) $\{5,6,7,8,9\}$

(5) Which of the following is the example of Singleton set

(a) $A = \{x / x = x^2, x \in N\}$

(b) $A = \{9\}$
(c) Both (a) and (b)
(d) None of the above

Ans → (c) Both (a) and (b)

(6) Which of the following is not finite set.
(a) $A = \{1,2,3,4,5,6,7,8,9,10\}$
(b) $B = \{x / 0 \leq x \leq 15, x \in Z\}$
(c) $C = \{x / x \in R\}$
(d) $D = \{x / |x^2 - 2| \leq 25, x \in Z\}$

Ans → (c) $C = \{x / x \in R\}$

(7) Which of the following is Null set or Empty set
(a) $A = \{x / x$ is odd number between 1 and 3$\}$
(b) $B = \{x / x$ is set of all prime number between 5 and 7$\}$
(c) $C = \{x / x$ is even number between 2 and 4$\}$
(d) All of the above

Ans → (d) All of the above

(8) If all the elements of set A are the elements of set B but set B has at least one more element which does not belong to set A is called
(a) $A \subseteq B$
(b) $A \subset B$
(c) $A = B$
(d) None of the above

Ans → (b) $A \subset B$ (proper subset of a set)

(9) If all the elements of set A have one-to-one correspondence with the elements of set B. It is denoted by
(a) $A = B$
(b) $A \equiv B$
(c) $A \sim B$
(d) None of the above

Ans → (b) $A \equiv B$

(10) e.g ~~$A = \{a, b, c\}$~~ $A = \{1, 2, 3\}$
~~$B = \{\}$~~ $B = \{1, 8, 27\}$
$\therefore A \equiv B$.

(10) If $A = \{a, b\}$ then $P(A) =$.
(a) $\{\phi, \{a\}, \{b\}, \{a, b\}\}$
(b) $\{\{a\}, \{b\}\}$
(c) $\{\phi, \{a\}, \{b\}\}$
(d) $\{a, b, \phi\}$

Ans → (a) $\{\phi, \{a\}, \{b\}, \{a, b\}\}$

(11) Let $A = \{1, 2, 3, 4, 5\}$ then the number of element in $P(A) =$
(a) 25
(b) 32
(c) 125
(d) 625

Ans → (b) 32 $2^n = 2^5 = 32$.

(12) The elements of all sets usually belong to some fixed large set called.
(a) Null set
(b) Unit set

(c) Universal Set
(d) None of the above

Ans → (c) Universal set

(13) Which one of the following is not Disjoint set
(a) $A = \{1,3,5,7\}$
$B = \{2,4,6\}$
(b) $A = \{1,3,5\}$, $B\{3,5\}$
(c) $A = \{x / x \text{ is prime no}, x \in N\}$
$B = \{x / x \text{ is non prime no}, x \in N\}$
(d) None of the above

Ans → (b) $A = \{1,3,5\}$, $B\{3,5\}$
for disjoint set $A \cap B = \phi$.
here $A = \{1,3,5\}$, $B = \{3,5\}$
$A \cap B = \{3,5\}$
So it is not disjoint set

(14). List out the elements of the following set
$A = \{2x / -1 < x < 5, x \in Z\}$
(a) $\{0,1,2,3,4\}$
(b) $\{0,2,4,6,8\}$
(c) $\{-1,0,1,2,3,4,5\}$
(c) $\{-1,0,1,2,3,4\}$

Ans → (b) $\{0,2,4,6,8\}$

(15) List out the elements of following set
$A = \{x^2 / -5 < x < 5, x \in N\}$
(a) $\{-4,-3,-2,-1,0,1,2,3,4\}$
(b) $\{1,2,3,4\}$

(c) {1, 4, 9, 16}
(d) {0, 1, 4, 9, 16}.

Ans ⇒ (c) {1, 4, 9, 16}

(16) List out the elements of following set

$A = \{x / x^3 \leq 64, x \in N\}$.

(a) {1, 2, 3, 4}
(b) {1, 8, 27, 64}
(c) {0, 1, 2, 3, 4}
(d) {-4, -3, -2, -1, 0, 1, 2, 3, 4}.

Ans ⇒ (a) {1, 2, 3, 4}

(17) Which of the following are true
① If $A = \{\{a, b\}\}$ then $a \in A$
② $\{1, 2\} \subseteq \{1, 2, 5\}$
③ $\phi \in \{\phi\}$
④ $\phi \in \phi$
(a) only ②
(b) ② and ③ ~~both~~
(c) ② and ④
(d) All ①, ②, ③ and ④

Ans ⇒ (b) ② and ③

(18) Which one of the following is not ~~property~~ property of Union
(a) $A \cup \phi = A$
(b) $A \cup U = A$
(c) $A \cup B = B \cup A$
(d) $A \cup U = U$

Ans ⇒ (b) $A \cup U = A$

(19) IF $A = \{x / x$ is even number $< 10, x \in N\}$
$B = \{x / 4 \leq x < 10, x$ is divisble by $2\}$
$C = \{x / x^3 \leq 64, x \in N\}$
then find the value of $A \cap B \cap C$
(a) $\{2, 4, 6, 8\}$
(b) $\{4\}$
(c) $\{4, 6, 8\}$
(d) $\{1, 2, 3\}$

Ans → (b) $\{4\}$

(20) If $A = \{x / x$ is prime number between 1 and $10\}$
$B = \{x / x \leq 8, x$ is even number $x \in N\}$
$C = \{x / 1 \leq x < 5, x \in Z\}$
then $A \cup (B \cap C) =$

(a) $\{2\}$
(b) $\{2, 4\}$
(c) $\{1, 2, 3, 4\}$
(d) $\{2, 3, 4, 5, 7\}$

Ans → (d) $\{2, 3, 4, 5, 7\}$

(21) $A \cup (B \cap C)$ is equal to
(a) $(A \cup B) \cap (A \cup C)$
(b) $(A \cup B) \cup (A \cup C)$
(c) $(A \cap B) \cap (A \cap C)$
(d) $(A \cap B) \cup (A \cap C)$

Ans → (a) $(A \cup B) \cap (A \cup C)$

(22) If $A = \{a / a < 4, a \in Z\}$
$B = \{b / b^2 \leq 25, b \in Z\}$
$C = \{c / c > 0, c \in Z\}$. then $A \cap (B \cup C) =$
(a) $\{1, 2, 3\}$
(b) $\{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$
(c) $\{0, 1, 2, 3\}$
(d) $\{-5, -4, -3, -2, -1, 0\}$
Ans (b) $\{-5, -4, -3, -2, -1, 0, 1, 2, 3\}$

(23) A - B is equal to
(a) $\{x / x \in B$ but $x \in A\}$
(b) $\{x / x \in A$ but $x \notin B\}$
(c) $\{x / x \notin A$ and $x \notin B\}$
(d) $\{x / x \in A$ and $x \in B\}$
Ans (b) $\{x / x \in A$ but $x \notin B\}$.

(24) A - (A ∩ B) is equal to
(a) A - B
(b) (A - A) ∩ (A - B).
(c) B - A
(d) A ∩ (A ∪ B).
Ans (a) A - B

(25) A - (B ∩ C) is equal to
(a) A - C
(b) (A - B) ∪ (A - C)
(c) (A - B) ∩ (A - C)
(d) None of the above.
Ans (b) (A - B) ∪ (A - C).

(26) If $A = \{P / 0 < P < 5, P \in Z\}$
$B = \{q / q$ is odd number $< 8, q \in N\}$
$C = \{r / r^2 < 10, r \in Z\}$ then
$A - (B \cup C)$ is equal to
(a) $\{1,3,5,7\}$
(b) $\{1,2,3,4\}$
(c) $\{2,4\}$
(d) $\{4\}$

Ans → (d) $\{4\}$

(27) $A \Delta B$ is equal to
(a) $\{x / x \in (A \cup B)$ but $x \notin (A \cap B)\}$
(b) $(A \cap B) - (A \cup B)$
(c) $\{x / x \in (A \cap B)$ but $x \notin (A \cup B)\}$
(d) All of the above

Ans → (a) $\{x / x \in (A \cup B)$ but $x \notin (A \cap B)\}$

(28) A = set of letters of word COLLEGE
B = set of letters of word SCHOOL
the $A \Delta B$ is equal to
(a) $\{C, O, L\}$
(b) $\{C, O, L, E, G, S, H\}$
(c) $\{E, G, S, H\}$
(d) None of the above

Ans → (c) $\{E, G, S, H\}$

(29) If A, B, C be three sets such that $A \cup B = A \cup C$ and $A \cap B = A \cap C$, then
(a) $B = C$
(b) $A = C$
(c) $A = B = C$
(d) $A = B$

Ans) (a) B=C

30) How many rational and irrational numbers are possible between 0 and 1?
(a) 0
(b) finite
(c) infinite
(d) None of the above

Ans) (c) infinite

(31) Empty set is a?
(a) Finite set
(b) Invalid set
(c) Infinite set
(d) None of the above

Ans) (a) Finite set
The empty set is the unique set having no elements and its size or cardinality (count of elements in a set) is zero.

(32) Which of the following two sets are equal?.
(a) A = {1,2} and B = {1}
(b) A = {1,2} and B = {1,2,3}
(c) A = {1,2,3} and B = {2,1,3}
(d) A = {1,2,4} and B = {1,2,3}

Ans) (c) A = {1,2,3} and B = {2,1,3}

(33) In a class of 50 students, 10 did not opt for math, 15 did not opt for science and 2 did not opt for either. How many students of the

class opted for both math and science

(a) 24
(b) 25
(c) 26
(d) 27

Ans) (d) 27

Total Student = 50
Student who did not opt for math = 10
" " " " science = 15
" " " " either maths or science = 2

Total of 40 student in math (50-10) and 13 did not opt for science but did for math. = 40 - 13 = 27

∴ students of the class opted for both math and science = 27

(34) Order of the power set of a set of ~~ord~~ order n is

(a) n
(b) 2^n
(c) n^2
(d) 2^n

Ans (d) 2^n

(35) which of the following is not a property of complement of a Set

(a) $(A')' = A$
(b) $(A \cup B) \cap (A \cup B') = A$
(c) $(A \cap B) \cup (A \cap B') = A$
(d) $A \cap A' = U$

Ans (d) $A \cap A' = U$ (because $A \cap A' = \phi$)

(36) Number of subset of a set of order three is
(a) 3
(b) 6
(c) 8
(d) 9

Ans (c) 8 $\Rightarrow 2^3 = 8$

(37) If $U = \{x / x \leq 20, x \in N\}$
$A = \{y / 5 < y < 12, y \in N\}$
$B = \{2z / z \leq 6; z \in N\}$.
then find $A \cap B'$
(a) $\{2, 4, 12\}$
(b) $\{7, 9, 11\}$
(c) $\{2, 4, 6, 7\}$
(d) None of the above

Ans (b) $\{7, 9, 11\}$

(38) $(A \cup B)'$ is equal to
(a) $A' \cup B'$
(b) $(A \cap B)'$
(c) $A' \cap B'$
(d) None of the above

Ans (c) $A' \cap B'$

(39) If $U = \{x / x \leq 15, x \in N\}$
$A = \{y / -5 \leq y \leq 8, y \in U\}$
$B = \{z / z$ is odd number, $z \in U\}$
$C = \{2, 3, 5, 7, 11, 12, 14\}$. then find
$A' - (B \Delta C)$
(a) $\{1, 3, 5, 7, 9\}$
(b) $\{10, 11\}$
(c) $\{11, 12, 14\}$

D (d) {10, 11, 12, 14}

Ans, (b) {10, 11}

(40) A × B is equal to

(a) {(x, y) / x ∈ A, y ∈ B}

(b) {(x, y) / x ∉ A, y ∉ B}

(c) {(y, x) / y ∈ B, x ∈ A}

(d) None of the above

Ans, (a) ~~A×B~~ {(x, y) / x ∈ A, y ∈ B}

(41) If set A has m elements and set B has n elements then A×B has _____ elements.

(a) m + n

(b) m/n

(c) m.n

(d) None of the above

Ans, (c) 6 m.n

(42) If U = set of letters of the word 'WHAT'
A = Set of letters of word 'HET'
B = Set of letters of the word 'HEAR'
C = set of letters of the word 'EAR' then find (A∩B) × (B∩C).

(a) {H, E, R}

(b) {(H,E), (H,A), (H,R), (E,E), (E,A), (E,R)}

(c) {(H,H), (H,E), (H,A), (H,R)}

(d) {W, H, T}

Ans, (b) {(H,E), (H,A), (H,R), (E,E), E,A), (E,R)}